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PTO/SB/21 (02-04)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/085,187
Filing Date	February 27, 2002
First Named Inventor	Joseph A. Kwak
Art Unit	2665
Examiner Name	Daniel J. Ryman
Attorney Docket Number	I-2-0203.4US

Total Number of Pages in This Submission

ENCLOSURES *(Check all that apply)*

- [X] Fee Transmittal Form
- [ ] Fee Attached
- [ ] Amendment/Reply
- [ ] After Final
- [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
- [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance communication to Technology Center (TC)
- [ ] Appeal Communication to Board of Appeals and Interferences
- [X] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) (please Identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Jeffrey M. Glabicki Reg. No. 42,584 Volpe and Koenig, P.C.
Signature	
Date	7/14/04

CERTIFICATE OF TRANSMISSION/MAILING

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Typed or printed name	Jeffrey M. Glabicki		
Signature		Date	7/14/04

PTO/SB/17 (10-03)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 330.00

Complete if Known	
Application Number	10/085,187
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Art Unit	2665
Attorney Docket No.	I-2-0203.4US

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 09-0435

Deposit Account Name: InterDigital Communications Corporation

The Director is authorized to: *(check all that apply)*

☒ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($) 0.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below	Fee Paid
Total Claims	-	=	X		=
Independent Claims	-	=	X		=
Multiple Dependent					=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 330.00

SUBMITTED BY

(Complete *(if applicable)*)

Name *(Print/Type)*	Jeffrey M. Glabicki	Registration No. *(Attorney/Agent)*	42,584	Telephone	215-568-6400
Signature				Date	7/14/04

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Joseph A. Kwak

Application No.: 10/085,187

Confirmation No.: 3548

Filed: February 27, 2002

For: METHOD FOR PHYSICAL LAYER AUTOMATIC REPEAT REQUEST FOR A SUBSCRIBER UNIT

Group: 2665

Examiner: Daniel J. Ryman

Our File: I-2-0203.4US

Date: July 14, 2004

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Further to the May 14, 2004 Notice of Appeal, Applicant hereby submits this Appeal Brief.

TABLE OF CONTENTS

(1) REAL PARTY IN INTEREST

The real party in interest is the assignee of record, InterDigital Technology Corporation.

(2) RELATED APPEALS AND INTERFERENCES

Appeal Briefs were filed on April 12, 2004 for U.S. Patent Application No. 10/085,203 and U.S. Patent Application No. 09/939,410. U.S. Patent Application No. 09/939,410 is the parent of the present application and U.S. Patent Application No. 10/085,203. Other than those appeals no other appeals or interferences are known which will directly affect or be directly affected by or have a bearing on the Board's decision in the present appeal.

(3) STATUS OF THE CLAIMS

Claims 1-9 are the subject of this appeal and are attached in Appendix A. No other claims are pending. Claims 1 and 7 are finally rejected under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 5,101,406 (Messenger). Claims 2, 6 and 9 are finally rejected under 35 U.S.C. §103(a), as being unpatentable over Messenger in view of U.S. Patent No. 5,828,677 (Sayeed et al.). Claim 3 is finally rejected under 35 U.S.C. §103(a), as being unpatentable over Messenger in view of Sayeed et al. and further in view of U.S. Patent No. 6,449,246 (Barton et al.). Claim 4 is finally rejected under 35 U.S.C. §103(a), as being unpatentable over Messenger in view of U.S. Patent No. 6,064,692 (Chow). Claims 5 and 8 are finally rejected under 35 U.S.C. §103(a), as being unpatentable over Messenger in view of U.S. Patent No. 5,982,760 (Chen).

(4) STATUS OF THE AMENDMENTS

No Amendments were filed after the February 17, 2004 Final Action.

(5) SUMMARY OF THE INVENTION

The data modulation of a subscriber unit is adjusted. *See* ¶[0020] and [0024]. Data is received at a transmitter for transmission. *See* ¶[0024]. The received data is formatted into packets for transmission. *See* ¶[0016]. Each packet has a particular type of encoding/data modulation. *See* ¶[0016]. The packets are transmitted. *See* ¶[0016] A return channel is monitored for receipt of an acknowledgment for each packet and that packet has been received. *See* ¶[0031] and [0032]. A packet is retransmitted at the transmitter, if an acknowledgment for that packet has not been received. *See* ¶[0032]. Retransmission statistics are collected. *See* ¶[0020]. Each particular encoding/data modulation is adjusted using the collected retransmission statistics. *See* ¶[0020]. If the collected retransmission statistics indicate a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicate a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation. *See* ¶[0021]-[0023].

(6) ISSUES

(1) Do claims 1 and 7 meet the requirements of 35 U.S.C. §102(b), as not being anticipated by U.S. Patent No. 5,101,406 (Messenger)?

(2) Do claims 2, 6 and 9 meet the requirements of 35 U.S.C. §103(a), as being unpatentable over Messenger in view of U.S. Patent No. 5,828,677 (Sayeed et al.)?

(3) Does claim 3 meet the requirements of 35 U.S.C. §103(a), as being unpatentable over Messenger in view of Sayeed et al. and further in view of U.S. Patent No. 6,449,246 (Barton et al.)?

(4) Does claims 4 meet the requirements of 35 U.S.C. §103(a), as being unpatentable over Messenger in view of U.S. Patent No. 6,064,692 (Chow)?

(5) Do claims 5 and 8 meet the requirements of 35 U.S.C. §103(a), as being unpatentable over Messenger in view of U.S. Patent No. 5,982,760 (Chen)?

(7) GROUPING OF CLAIMS

The claims on appeal consist of four groups. Claims 1, 2, 6, 7 and 9 are in group one and claim 1 is the representative claim. Claim 3 is in Group 2 and claim 3 is the representative claim. Claim 4 is in Group 3 and claim 4 is the representative claim. Claims 5 and 8 are in Group 4 and claim 5 is the representative claim.

(8) ARGUMENT

Background

This application (U.S. Patent Application No. 10/085,203) was filed on February 27, 2002.

Group 1 (Claims 1, 2, 6, 7 and 9):

Issue (1): Do claims 1 and 7 meet the requirements of 35 U.S.C. §102(b), as not being anticipated by U.S. Patent No. 5,101,406 (Messenger)?

Messenger at column 2, ln. 69 to column 3, ln. 6 (in the BRIEF SUMMARY OF THE INVENTION) states, "... [w]hen a statistically unacceptable transmission error rate is observed, the remote station may then change its current encoding algorithm to another. This may be done by stepping in a predetermined manner through the various encoding algorithms recognized by the system or by pseudorandom selection." Accordingly, Messenger only discloses changing the "current encoding algorithm" in view of an unacceptable transmission error rate.

Furthermore, in the DESCRIPTION OF THE PREFERRED EMBODIMENTS, changes in view of unacceptable transmission error rates is described differently. For instance at column 8, lns. 34-42 Messenger states, "[a]ccordingly, the remote station

may be appropriately programmed to change its current operating frequency in response to transmission errors. The changing of the operating frequency in response to transmission errors is preferably done in a pseudorandom manner to avoid the possibility that all remote system stations will be transmitting on a single frequency, such a condition enhancing the likelihood of conflicting transmissions." Accordingly, Messenger, describes changes in view of transmission error as changing the transmission frequency.

The claims recite both "a higher capacity encoding/data modulation scheme" and "a lower capacity encoding/data modulation scheme". Messenger does not disclose higher or lower capacity. Messenger describes changing an encoding algorithm in a pseudo random manner, which indicates that the encoding algorithms are somewhat equivalents or why would the selection be in a pseudorandom order. Also, the description in the DESCRIPTION OF THE PREFERRED EMBODIMENTS switches between carrier frequencies, which inherently would have a same capacity. The switching between frequencies would result in finding a frequency having less interference, not a different capacity.

The claims also recite, "collecting retransmission statistics", "low retransmission statistics" and "high retransmission statistics". Messenger only discloses an unacceptable error rate and does not define how that is measured, in particular not as low or high retransmission statistics. Also, Messenger clearly does not disclose changing of the modulation scheme to a higher capacity encoding/data modulation scheme in view of low retransmission statistics. Messenger clearly only describes changing the "encoding algorithm" in view of unacceptable error rate and not changing in view of an acceptable error rate (low retransmissions).

With respect to issues 2-5, none of the additional references, Sayeed, Barton, Chow or Chen, cure this lack of Messenger's teaching and are not cited by the examiner as doing such. Accordingly, these claims meet the requirements of 35 U.S.C. §102(b) and 35 U.S.C. §103(a).

Group 2 (Claims 3):

With respect to Group 2, Barton is cited as disclosing "nulling subchannels". However, in a careful review of that reference, it only discloses "inserting nulled symbols into the subcarriers" at column 11, lines 34-38. Nulling symbols merely implies that the sub-carriers are present but contain no data. In the present invention, the sub-carriers are nulled to reduce interference to other subcarriers. Furthermore, Barton does not disclose the use of nulled symbols in context with adaptive modulation and, accordingly, it is not correctly combinable with Messenger and Sayeed. There is no motivation or suggestion in these references for such a combination. In addition, all the reasons stated with respect to group 1 also apply to Group 2.

Group 3 (Claim 4):

With respect to Group 3, Chow is cited as disclosing the use of single carrier-frequency domain equalization (SC-FDE) air interface. Although Chow refers to using a frequency domain equalizer in the receiver, it does not disclose an SC-FDE air interface which refers to the transmission scheme. Furthermore, Chow does not disclose the use of frequency domain equalization in context with adaptive modulation and, accordingly, it is not correctly combinable with Messenger. There is no motivation or suggestion in these references for such a combination. In addition, all the reasons stated with respect to group 1 also apply to Group 3.

Group 4 (Claims 5 and 8):

With respect to Group 4, although Chen discloses a fast feedback channel, it does not disclose using it for transmission of acknowledgements or negative acknowledgements. Chen describes the fast feedback channel as sending commands. Accordingly, Chen does not describe the use of that channel for acknowledgements or in context of the remainder of the claim. In addition, all the reasons stated with respect to group 1 also apply to Group 4.

(9) CONCLUSION

For the reasons stated above, pending claims 1-9 meet the requirements 35 U.S.C. §102(b) and 35 U.S.C. §103(a). Accordingly, the final rejection should be reversed. After reversal, Applicant respectfully requests that the pending claims be passed to allowance.

Respectfully submitted,

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By _____
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APPENDIX A
(PENDING CLAIMS OF U.S. PATENT APPLICATION NO. 10/085,187)

1. A method for adjusting data modulation at a subscriber unit, comprising:

receiving data at a transmitter for transmission;

formatting the received data into packets for transmission, each packet having a particular type of encoding/data modulation;

transmitting the packets;

monitoring a return channel for receipt of an acknowledgment for each packet that that packet has been received;

retransmitting a packet at the transmitter, if an acknowledgment for that packet has not been received;

collecting retransmission statistics; and

adjusting each particular encoding/data modulation using the collected retransmission statistics; wherein if the collected retransmission statistics indicate a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicate a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation.

2. The method of claim 1 wherein the particular type of encoding/data modulation is forward error correction (FEC).

3. The method of claim 2 wherein the packets are transmitted using an orthogonal frequency division multiple access (OFDMA) air interface and the FEC encoding/data modulation adjusting is performed in addition to selective nulling of subchannels in an OFDMA set.

4. The method of claim 1 wherein the packets are transmitted using a single carrier having a frequency domain equalization (SC-FDE) air interface.

5. The method of claim 1 wherein the return channel is a fast feedback channel when the packets are transmitted using a code division multiple access (CDMA) air interface.

6. The method of claim 1 further comprising:

identifying a packet as having an unacceptable error rate responsive to receipt of a negative acknowledgment.

7. A method for adjusting data modulation at a subscriber, comprising:

formatting data into packets for transmission over a wireless air interface;

receiving packets of data over said air interface, each packet having a particular encoding/data modulation;

for each received packet, generating and transmitting a positive acknowledgment at the physical layer of said air interface when a received packet has an acceptable error rate;

collecting retransmission statistics; wherein if the collected retransmission statistics indicate a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicate a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation.

8. The method of claim 7 wherein the positive acknowledgments are transmitted on a fast feedback channel when said air interface using a code division multiple access (CDMA).

9. The method of claim 7 further comprising transmitting a negative acknowledgment if that packet has an unacceptable error rate.